

Lessons Learned in on-site advanced metering

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What Integrated Metering Can Do:

❑ Meter to Manage:

■ Energy Generation

▣ Net-metering

■ Energy Consumption

▣ Integrated utility data

▣ Shadow-metering of utility meters

▣ Sub-metering: By tenant, By function

■ Energy Storage

▣ Time-of-day management

❑ Report:

■ Per mandates/EISA/EPACT/Executive Orders

■ DUERS and other standard reports

■ Benchmark across buildings/sites/tenants

- ❑ **Today, we can manage:**
Generation + Consumption + Storage
 - By time-of-day
 - By availability
 - By fuel optimization / pricing
 - By real-time pricing
 - In real-time
 - With 2-way utility communications

- ❑ **Tomorrow?**

Meter Integration

□ TCP/IP based metering enables integration with:

- EMS systems
- Master energy database
- Building Automation systems
- DUERS and other standard reporting systems
- Base comms and IT
- Base wireless/wired LAN

□ Enables automated utility interfaces:

- Net-metering
- Demand Response
- 2-way communications 'gateway'

Lessons Learned: Integrated DG, Aerospace Facility

- ❑ **Hybrid renewable DG + Storage:**
 - ▣ Wind, Hydropower, Compressed Air
- **Purpose:**
 - ▣ Reduction of purchased power costs
- **Successes:**
 - ▣ Peak Load Reduction
 - ▣ Integration across DG and storage systems
 - ▣ Hydropower ROI
- **Challenges:**
 - ▣ Compressed Air Storage not cost-effective
 - ▣ Utility participation/incentives lacking
- **Conclusion:**
 - ▣ Hybrid DG for reduction of peak load works

Lessons Learned: wireless metering, DoD site

□ Purpose:

- Agency mandate

□ Successes:

- “smart” meter costs/ease-of-use/competitive price

□ Challenges:

- Radios, as spec’d, had communication problems
- RF Interference (aircraft comms/radar array)

□ Conclusion:

- Design/build vs Bid-and-Spec would mitigate risks
- High RF interference sites may not be good candidates for wireless metering

Integrated utility metering, DoD site

❑ All Utility Metering integrated over IP LAN:

- Electric, Gas, Water
- Integrated w/EMS

❑ Purpose:

- Energy conservation
- Agency mandate

❑ Successes:

- Integration of meter data

❑ Challenges:

- Power quality
- EMS implementation delays meter data access

Advanced metering at a high-security site

- ❑ **Integrated metering over IP**
 - Electric
 - Gas
- ❑ **Purpose: meet agency mandate/exec order**
- ❑ **Successes:**
 - Fiber communications
 - Integrated meter data
- ❑ **Challenges:**
 - Comms department security concerns
 - Low priority project for customer